

### CLAIMS

1. Heald frame for weaving loom, said frame being obtained by assembling two struts with two cross-bars each provided with a heald-carrier rod in one piece with the corresponding cross-bar or added thereon over substantially the whole of its length, at least one of the extremities of at least one of the cross-bars being equipped with at least one member for locking a part of an adjacent strut, inside an end portion of said cross-bar forming a zone of junction with said strut, characterized in that said end portion (P) comprises a part (35; 135; 235; 335; 435; 535; 835; 935; 1035; 1135) whose external transverse profile is substantially convex and at least one hoop (40; 140; 240; 340; 440; 540; 640; 740; 840; 940; 1040; 1140) surrounding said part of substantially convex external transverse profile and said locking member (25, 26; 944-946; 1044, 1046; 1125a, 1126), in order to resist a locking effort ( $F_3$ ,  $F'_3$ ) exerted by said locking member.
2. Heald frame according to Claim 1, characterized in that said hoop (40; 140; 240; 340; 440; 540; 640; 740; 840; 940; 1040) surrounds said part of substantially convex external transverse profile (35; 135; 235; 335; 435; 535; 835; 935; 1035) which is tubular and itself surrounds said locking member (25, 26; 1044, 1046) and/or said part (921a; 1021a) of said strut.
3. Frame according to one of the preceding Claims, characterized in that said cross-bar (22; 122; 222; 322; 422; 522; 622. 822; 922; 1022; 1122) is provided, between said zone of junction (35; 135; 235;

335; 435; 535; 835; 935; 1035; 1128a) and said heald-carrier rod (29; 129; 829; 929; 1129), with a volume (36; 136; 436; 836; 936; 1136) for partially receiving said hoop (40; 140; 240; 340; 440; 540; 640; 740; 840; 940; 1040; 1140).

4. Frame according to Claim 3, characterized in that said volume is formed  
5 by a groove (36; 136; 436; 836; 936; 1136) extending between said zone of junction (35; 135; 435; 935; 1128a; 1135) and said rod (29; 129; 829; 939; 1129), in a direction ( $Y_{36}$ - $Y'_{36}$ ;  $Y_{836}$ - $Y'_{836}$ ) substantially parallel to a longitudinal axis ( $Y_{22}$ - $Y'_{22}$ ;  $Y_{822}$ - $Y'_{822}$ ) of said cross-bar (22; 122; 822; 922; 1122).

5. Frame according to Claim 4, characterized in that said groove (36; 136;  
10 436) opens out on a terminal face (28a) of the extremity (28; 928; 1028) of the cross-bar (22; 122; 222; 322; 422; 522; 622; 922; 1022; 1122).

6. Frame according to Claim 3, characterized in that said groove is formed  
by an oblong slot (836) made between said part (835) of substantially convex  
external transverse profile and said heald-carrier rod (829), said slot not opening  
15 out on a terminal face (828a) of the extremity (828) of the cross-bar (822).

7. Frame according to one of Claims 1 to 5, characterized in that said heald-carrier rod (29; 129; 829; 929; 1129) extends in overhang over a part (29a; 129a; 929a) of its length disposed opposite said zone of junction (35; 135; 935; 1128a; 1135).

20 8. Frame according to one of the preceding Claims, characterized in that it comprises means (40-42; 144-146; 244-247; 344-347; 444, 448; 541; 944-946; 1044, 1046; 1148) for immobilizing said hoop (40; 140;

240; 340; 440; 540; 640; 740; 840; 940; 1040; 1140) on said zone of junction (35; 135; 235; 335; 435; 535; 835; 935; 1035; 1128a; 1135).

9. Frame according to Claim 8, characterized in that said immobilizing means comprise a wedge (144, 144'; 244; 344) adapted to cooperate with a  
5 corresponding ramp (146a, 146a', 222b; 340c) provided on an outer face (222b) of said cross-bar (222), on an intermediate piece (146) or on an inner face (340c) of said hoop (340) with a view to tensioning said hoop (140; 240; 340).

10. Frame according to Claim 9, characterized in that said wedge (144; 244; 344) is controlled, in its displacement with respect to said ramp (146a, 146'a,  
10 222b; 340c), by means of a screw-nut link (144-145; 244-245; 344-345).

11. Frame according to Claim 8, characterized in that said hoop (440; 1140) is glued (448; 1148) around said extremity (435; 1128a) of cross-bar (422; 1122a).

12. Frame according to Claim 8, characterized in that said hoop (540) is provided with at least one orifice (540e) for passage of a locking member (541)  
15 on said cross-bar extremity (535).

13. Frame according to one of the preceding Claims, characterized in that said hoop (40) is formed by bending a metal sheet shaped around said zone of junction (35).

14. Frame according to one of the preceding Claims, characterized in that it  
20 comprises mechanical means (944-946; 1044-1045) adapted to ensure both the immobilization ( $F_{10}$ ) of a part (921a, 1021a) of said strut (921; 1021) in said end part (935;

1035) and the tensioning ( $F_{11}$ ) of said hoop (940; 1040).

15. Frame according to Claim 14, characterized in that said mechanical means comprise at least one wedge (944, 944', 946; 1044, 1044') interposed between said part (921a, 1021a) of said strut (921; 1021) and said hoop (940; 1040).

5 16. Frame according to Claim 15, characterized in that said wedge (944, 944'; 1044, 1044') is controlled, in a movement of translation substantially parallel to a longitudinal axis ( $Y_{922}$ - $Y'_{922}$ ;  $Y_{1022}$ - $Y'_{1022}$ ) of said cross-bar (922; 1022), by a screw-nut type link (944-945; 1044-1045).

10 17. Frame according to one of Claims 15 or 16, characterized in that said mechanical means comprise two wedges (944, 944'; 1044, 1044') provided with effort transmission ramps (944a, 944'a; 1044a, 1044'a) inclined at angles ( $\alpha_1$ ,  $\alpha_2$ ;  $\beta_1$ ,  $\beta_2$ ) opposite with respect to a longitudinal axis ( $Y_{922}$ - $Y'_{922}$ ;  $Y_{1022}$ - $Y'_{1022}$ ) of said cross-bar (922; 1022).

15 18. Frame according to one of Claims 14 to 17, characterized in that the part (921a, 1021a) of said strut (921; 1021) inserted in said end part (935; 1035) of the cross-bar (922; 1022) is in one piece with the principal elongated part (921b; 1021b) of said strut.

19. Frame according to one of Claims 14 to 18, characterized in that the part (1021a) of said strut (1021) inserted in said end part (1035) of the cross-bar  
20 (922; 1022) is provided with a member (1021e) for holding said mechanical means (1044-1045).

20. Frame according to Claims 16 and 19, characterized in that said member is a rod (1021e) provided with an orifice (1021f) for passage of a screw (1045) for tightening two wedges (1044, 1044') against ramps

(1021c, 1021d) formed on said part (1021d) of said strut (1021), on either side of said rod.

21. Frame according to one of Claims 14 to 20, characterized in that, at the level of at least one of its upper (932, 1032) or lower (921, 1031) zones of  
5 contact with the strut (921) and/or with wedges (1044, 1044') borne by said strut (1021), said cross-bar (922, 1022) is provided with at least two substantially planar bearing surfaces (931i, 931j, 932i, 932j) parallel to a longitudinal axis ( $Y_{922}$ - $Y'_{922}$ ) of the cross-bar and oblique between one another, while said part (921a) of said strut (921) introduced in said cross-bar and/or wedges (1044,  
10 1044') borne by said part (1021a) is and/or are provided with complementary bearing surfaces (921i, 921j) likewise oblique between one another.

22. Frame according to one of Claims 14 to 21, characterized in that said mechanical means comprise at least one control screw (945; 1045) offset, in a direction perpendicular to a longitudinal axis ( $X_{922}$ - $X'_{922}$ ;  $Y_{1022}$ - $Y'_{1022}$ ) of said  
15 cross-bar (922; 1022) and beyond the part (921a, 1021a) introduced in said cross-bar, with respect to a principal part (921b; 1021b) of said strut (921; 1021).

23. Frame according to one of the preceding Claims, characterized in that said hoop (1140) surrounds (at 1140a) an extremity (1128a) of a principal part  
20 (1122a) of said cross-bar (1122) and extends beyond this extremity in a tubular part (1140b) for receiving and immobilizing said part (1121a) of said strut (1121).

24. Frame according to one of the preceding Claims, characterized in that said hoop is crimped hot around said cross-bar.

25. Frame according to one of the preceding Claims, characterized in that said cross-bar (922) is provided with at least one flexible slot (949).

26. Frame according to Claim 25, characterized in that said part of said extremity (935) of substantially convex profile is of substantially rectangular  
5 section and in that said slot (949) is made in a long side (933, 934) of said section.

27. Frame according to one of the preceding Claims, characterized in that the substantially convex profile of said part (1035) of said extremity of the cross-bar is obtained by adding a filling element (1050) between said part (1035) and said  
10 hoop (1040).

28. Weaving loom (M) equipped at least with a heald frame (2) according to at least one of the preceding Claims.